Harley 36V / 48V

User Manual

DAYMAK

About Daymak

Daymak is one of Canada's largest Alternative Vehicle providers. We design, engineer, manufacture, import and repair everything from recreational dirt bikes, go-karts and electric golf cars to alternative transportation solutions such as e-bikes and gas scooters.

Our electric bicycles represent an energy-efficient and eco-friendly alternative for people who need to get around the city. They greatly increase the practicality of bicycle transportation in urban centres. Costing only a few cents to charge, an e-bike can make city life more convenient and much less expensive.

While there are many new Green technologies that are still in their infancy, electric bicycles have been developing over the last 40 years or more. E-bike technology has been dramatically refined since the introduction of the first custom-conversion bicycles. Today, electric bicycles are a supremely reliable and affordable means of transportation.

Daymak is constantly developing new eco-friendly alternative transportation strategies, led by its own Research and Development department in Toronto, Canada. We are always improving our products. Our innovative in-house engineering and quality testing provide customers with many new kinds of reliable, eco-friendly vehicles, designed to help change the lives of our customers and the world.

Daymak warranties, services, and stocks parts for everything it sells. We support our products.

Please feel free to visit our website. You'll find the latest in cool transportation solutions, support for the products you've purchased and contact information.

DAYMAK

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FULLY CHARGE BATTERIES BEFORE FIRST USE - Batteries should be fully charged immediately when they are received and immediately after each use for the recommended charge times (see below).

- Li-Ion (Lithium Ion) batteries 4-6 hours
- NiMH (Nickel Metal Hydride) 4-6 hours
- SLA (Sealed Lead Acid) batteries 6-8 hours

With proper care and maintain your hybrid electric bicycle will provide ease of use and be fun to ride.
Below are points that will help you to maximize the enjoyment you get from you new hybrid electric bicycle.

FACTORS TO MAXIMIZE THE RANGE OF YOUR HYBRID ELECTRIC BICYCLE

- **RIDER INPUT** - the more the rider pedals the further the distance traveled. Continuous riding, as opposed to frequent stopping and starting, will yield the greatest range possible
- **ELEVATION GAIN** - the flatter the road the further the distance traveled
- **WEATHER** - cold weather can adversely affect the battery capacity
- **WIND** - traveling with a tailwind will increase distance traveled, traveling into a headwind will decrease distance traveled
- **TERRAIN** - the smoother the terrain (roadways vs. fireroads, etc.) the further the distance traveled
- **RIDER WEIGHT** - the lighter the rider, resulting in less drain on the batteries, the further distance traveled
- **BICYCLE MAINTENANCE** - a properly maintained bicycle will yield the greatest range possible
- **TIRE PRESSURE** - properly inflated tires have less rolling resistance and will be easier to pedal
- **BATTERIES** - properly charged and maintained batteries will yield the greatest range possible. Batteries stored in cold areas (below 50 degrees Fahrenheit / 10 degrees Celsius) will show reduced range. Never allow batteries to freeze (below 32º Fahrenheit) as this will result in permanent damage to them. Batteries that have not been kept in

Introduction

E-Bikes

Riding an electric bicycle is a great way to hop around town conveniently and cheaply. E-Bikes represent a natural progression in the development of urban transportation.

Using only small amounts of electricity, e-bikes have the potential to radically reduce the amount of pollution in our cities. As well, they are very quiet, so they do not add to the high levels of noise pollution which we often take for granted. They are easy, and usually free, to park. They are unobtrusive and highly practical additions to the urban landscape.

E-bikes are also inexpensive. They (currently) require no registration, no insurance, no licence and do not incur parking charges. As well, compared to internal combustion engines, the engines in electric vehicles have fewer moving parts and require far less maintenance.

Your Daymak e-bike is the result of Daymak's years of experience, the highly trained technical skills of our staff and careful, ongoing design work by our engineers. We hope you enjoy using this product and welcome any feedback that you may have.

New Laws

Most provinces in Canada, most states in the U.S.A, the United Kingdom and many European countries have new laws that permit cyclists to use electric motors to assist the regular operation of bicycles. Please check with your provincial or state government to learn about your local laws. At the back of this manual you will find the some of the common Canadian provincial regulations that govern e-bikes.

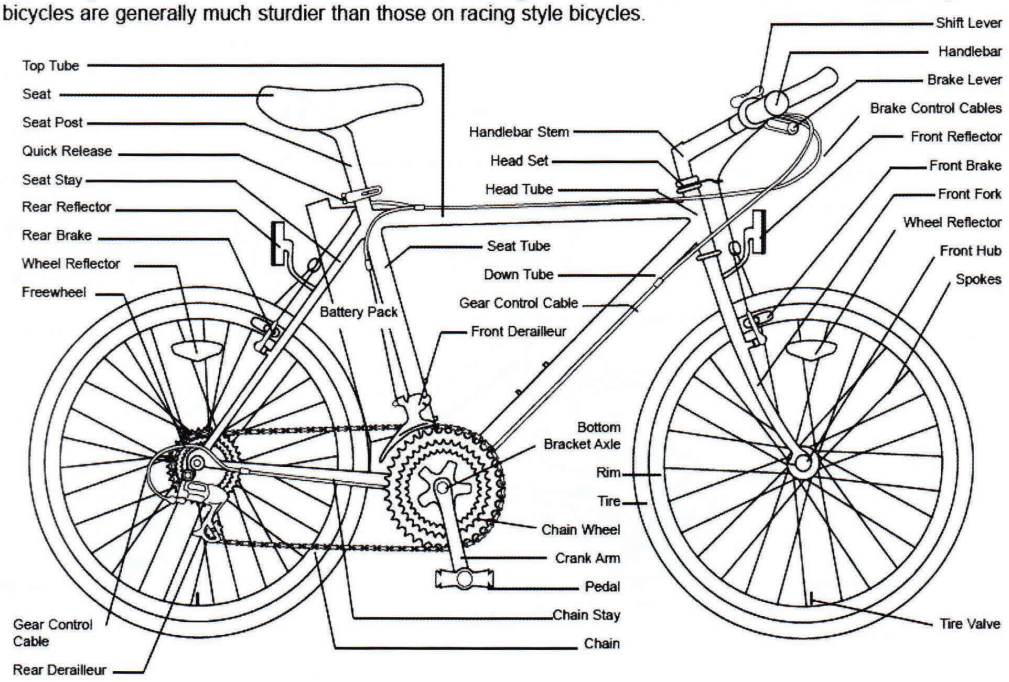
Liability

Daymak does not assume any liability for damages, loss of profits, or claims from third parties due to improper use of this product. Daymak does not assume any liability for damages due to problems with the product resulting from service by a third party that is not certified by Daymak.

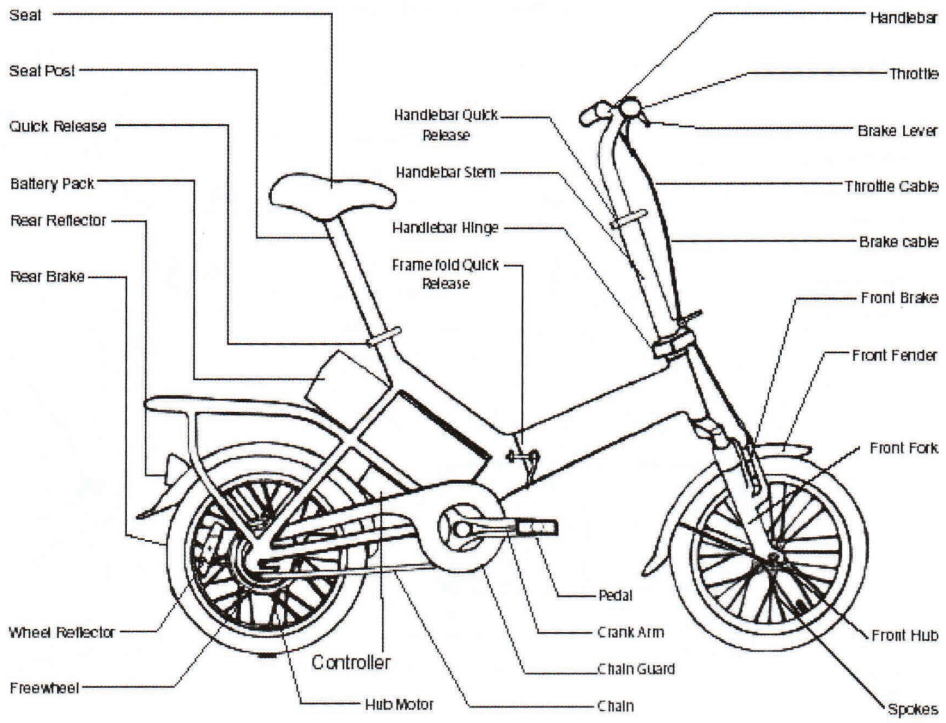
The information in this guide may be subject to change without notice. For the latest information available, please contact your local Daymak dealer or visit our website.

We have taken all possible measures to ensure the accuracy and completeness of the information in this guide. However, if you do find anything missing, incomplete or wrong, do not hesitate to contact us.

MOUNTAIN BICYCLES . Mountain bicycles are designed to give maximum comfort over a wide variety of road surfaces. The wider handlebars and convenient shift lever position make them very easy to control. Wider rims and tires give them a softer ride with more traction on rough surfaces. The frame and fork on mountain style bicycles are generally much sturdier than those on racing style bicycles.



FOLDING BICYCLES - Super portable, and easy folding design. Perfect for camping, and fits perfectly in RV' boats and car trunks.



Riding Instructions

This guide assumes that you already know how to ride a standard bicycle. Before you try to ride an electric bicycle, you should be very familiar with controlling and balancing a normal bicycle.

Caution

If you do not have cycling experience, an e-bike is too dangerous to ride. Do not begin learning to ride a bicycle using an e-bike.

Important Notes

- Ebikes are Fast! E-bikes are capable of traveling at higher speeds than many bicycle riders are accustomed to. Use caution at all times, especially when travelling in mixed traffic. Always take into account driving and traveling conditions.

- Obey the Law. Be sure to follow all provincial and city traffic laws. This includes obeying stop signs, checking carefully when turning, and riding defensively. An e-bike is a motorized vehicle, even though it is classed as a bicycle. You must follow the law.

- Stay Sober. Never ride your bicycle while intoxicated. An e-bike is capable of traveling faster than a normal bicycle, and you should always be in control of it.

- Share the Road. Be careful in mixed traffic. When on bicycle paths, traveling near pedestrians, or on recreational trails, try to be polite and courteous to those using the paths with you. E-bikes are new in most cities, so other users of the roads and recreational paths may not know how to deal with e-bike riders. Bear in mind that, in a sense, e-bike riders are "ambassadors" for this new method of transportation.

Items to Carry with the Electric Bike

It is a good idea to carry the following items with you at all times when you ride your e-bike.

- The charger, to charge the bike in case the battery power runs out
- 30 Amp Fuse, spares for the batteries, in case the fuses blow
- A lock, to secure your e-bike when you park it
- A helmet, as required by safety laws

Inspecting your Electric Bike

Always inspect your e-bike before you ride it, to make sure its safety features are operating properly. Many accidents can be avoided with routine inspections. Once you are comfortable with your e-bike, you will be able to detect small changes in the way it feels. If anything changes between uses, make sure to have it properly examined. Also, be sure to listen for changes in the sounds your e-bike makes over time. Any mechanical or power issues may have effects on the sounds the bicycle makes.

Holding the Handlebars

As with a normal bicycle or gas scooter, place your fingers over the brake levers, using the palms of your hand and your thumbs to wrap around and under the handlegrips. Doing this allows you to activate the brakes easily, by squeezing your hand, in case you have to stop quickly. This is the safe way to control your electric bicycle.

Turning your E-bike On and Off

To turn on your e-bike, insert the key into the "ignition", located just below the dash board, and turn the key to the right. When your e-bike is activated, the power indicator will light and the battery charge indicator will jump, showing you how much power your e-bike has. To turn off the e-bike, simply turn the key to the left, and remove the key.

Warning

When you activate the e-bike, the electrical system becomes live. Do not try to affect changes to the E-Bike (such as removing the battery or repairing electrical components) while the E-Bike is activated. Turn the E-Bike off and remove the key before you attempt to access any of the electrical components. Also, the battery carries a significant electric charge and can injure people if not treated properly and with respect.

Accelerating and Decelerating

The throttle is found on the right-side hand grip on the handlebars. Turn the grip forward (away from you) to accelerate. To decelerate, release the grip (turn it towards you). Don't over-rotate the accelerator, as this could damage the battery and electrical components.

Warning

Do not activate the accelerator until you are seated on the bicycle and are ready to accelerate. The e-bike can easily escape from your control, possibly injuring you or others, and the e-bike may be damaged by being dropped.

Stopping

Your e-bike has two sets of brakes, at the front and at the rear. The levers attached to the handlebars, on the left and right, activate the brakes. Pull the levers toward you to activate the brakes.

You can use both brakes to come to a stop more quickly, or you can use one of the brakes to come to a gentle stop, depending on your riding needs at the moment.

When the brakes are activated, the power to the engine is automatically turned off, until you release the brakes. This allows you to stop safely.

Safety Tips

- When you are traveling in wet weather, water may cause your brakes to function less efficiently because it reduces friction between the brake pads and the wheels. Take care to slow down and give yourself more room to stop or slow if necessary.

- It is a good idea to have your brakes and brake pads checked regularly. The brake pads will eventually wear down through friction, and after significant use will have to be replaced.

Signalling

The Horn

The e-bike has a horn. The horn button is on the left handlebar. Simply press it to activate the horn.

Turning Signal Lights

Your e-bike has turn signal lights. The turn signal activator is on the left handlebar. Push it left or right to activate it to indicate that you are turning in the appropriate direction, and press the middle of the button to turn it off. The turn signals also emit a noise, to ensure that everyone knows you are turning. This turn signal cannot be disabled without also disabling the visual signal.

Lights

The headlight and taillight are useful features when you are riding at night or in dark areas. They radically improve your safety in mixed traffic. The switch is located on the left handlebar. The lights on your e-bike consume some electricity. Keeping them on may reduce the maximum distance you can travel on one charge by about 5 %.

Pedaling

This e-bike is designed to be a motor-assisted bicycle. You can use the motor by itself, but ideally, you can work with the motor by pedaling. This increases the distance you can travel on your e-bike, because it assists the motor and reduces the amount of electricity you draw from the battery.

Riding in Wet Weather

Your e-bike is designed to function in wet conditions, such as when it is raining. However, because the motor is on the rear wheel, it is easy to slip when moving at high speeds. If it is very wet, be sure to avoid high speeds.

When you are traveling in wet weather, water may cause your brakes to function less efficiently because it reduces friction between the brake pads and the wheels. Take care to slow down and give yourself more room to stop or slow if necessary.

The Motor and Water

Your e-bike is not designed to be immersed in water. Always ensure that the water level does not go above the middle of the tire, to prevent water from getting inside the motor.

Water in the motor can cause short-circuits and may damage the electrical systems in your e-bike.

Riding in Cold Weather

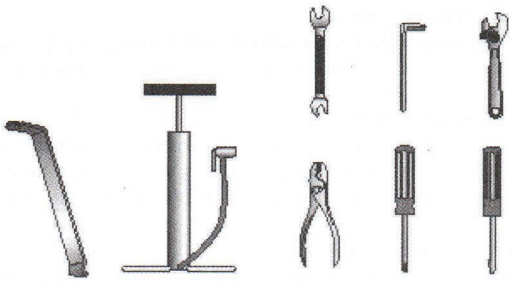
Your e-bike is designed to operate year-round. However, in very cold conditions or when there is a lot of snow or slush on the ground, it is possible for the motor in the e-bike to get wet or for the brakes to function less efficiently, just as can happen in wet weather. Below 10 degrees Celsius, the battery will not work as well as it would in warmer temperatures. While Lithium-Ion batteries perform better than Lead-Acid batteries in temperature extremes, both will experience reduced performance in cold temperatures.

Also, riding the e-bike in cold temperatures may require you to replace the battery sooner rather than later.

Controller connection diagram

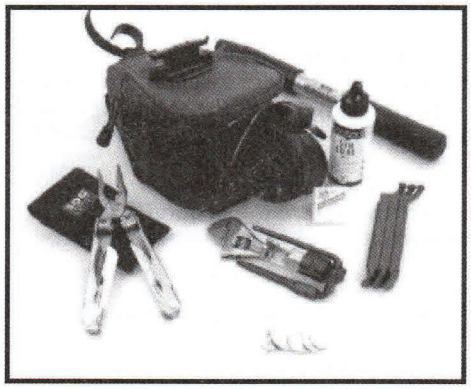
CONTROLLER	Connected to	DISPLAY	Connected to	PAS Sensor	Connected to	MOTOR
BLACK-WHITE brake level sensor						
BLACK-WHITE brake level sensor						
BLUE-RED-BLACK pas sensor the blu wire on the controller is disconnected to let the display turn off the pas system.			X	BLUE-RED-BLACK		
RED Battery (positive) connected to the discharge plug of the battery						
BLACK Battery (negative) connected to the discharge plug of the battery						
ORANGE-BLACK power of the display	X	RED-BLACK				
GREY Speed limiter, disconnected by default if connected the speed is 18Km/h						
BLACK-RED-GREEN Throttle						
GREEN from the throttle jack Management of the 3 speed by the display	X	GREEN				
BLUE					X	BLUE
YELLOW					X	YELLOW
GREEN					X	GREEN
BLUE-YELLOW-GREEN-RED-BLACK					X	BLUE-YELLOW-GREEN-RED-BLACK

DETAILED MAINTENANCE



Tools Required

1. Open ended wrench or ring wrenches: 8mm, 9mm, 10mm, 12mm, 13mm, 14mm, 15mm
2. Open end or pedal wrench 15mm
3. Allen key wrenches: 2.5mm, 3mm, 4mm, 5mm, 6mm, 8mm
4. Adjustable wrench
5. Standard flat head screwdriver
6. Standard Phillips head screwdriver
7. Standard slip joint pliers
8. Tire pump
9. Tube repair kit
10. Tire levers



Travel Tools

1. Spare Tube
2. Patch kit
3. Pump
4. Tire levers
5. Multi-tool
6. Change (phone call)

Maximum Load

Do not exceed the maximum load capabilities of your e-bike. You can find the exact loading capacity listed in the technical specifications in this guide.

If you exceed the maximum load, the performance of the bike will suffer.

Exceeding the maximum load of your e-bike could cause damage to the shocks, to the mechanism and, ultimately, even to the frame. It could also cause your motor to work too aggressively, and it may burn out.

Disconnecting the Circuit Breaker

When the circuit breaker is disconnected, all power from the battery to the e-bike is blocked. This is useful if you are going to store your e-bike or if it is damaged and you wish to bring it to be serviced.

Disable the circuit breaker using the following very simple procedure.

1. Open the seat compartment.
2. Find the circuit breaker switch (it should be very obvious).
3. Activate the switch. The power to the e-bike will be disabled.

Long-Term Storage of your E-bike

If you are storing your bike for a long period, disconnect the circuit breaker. This is a safer way to store the electric bicycle, as it prevents accidental activation of the e-bike and makes it impossible to activate it even with the key. The circuit breaker is found by opening up the battery case. It sits between the battery and the controller.

Please see the section titled "Your Battery" for instructions on battery maintenance while your e-bike is being stored.

The Battery

This section details what you need to know about the battery that powers your e-bike. Always remember to treat your e-bike's electrical systems with respect.

Battery Power

The dashboard has a battery charge indicator. When the e-bike is activated, the needle will jump and indicate the currently available battery power.

If the power has dropped significantly, you should charge your e-bike.

Distance and Power

Your battery has the capacity to carry you anywhere from 35 to 50 km before it must be recharged. The ability of your battery to power your bicycle depends on many variables. These variables include the weight of the rider, the prevailing wind resistance, the rider's driving habits, the presence of steep hills and inclines, and other issues such as proper air pressure in the tires.

Saving Power

If you are traveling long distances, you can save a lot of electricity by using better driving habits:

- **Coasting:** When going downhill or over long, flat road surfaces, try using your e-bike's momentum and allow it to coast, without drawing power from the motor.
- **Stopping and Starting:** Try to avoid stop and go movements. The motor draws more power when starting from a full stop.
- **Weight:** Remove unnecessary weight from the bike. This reduces the amount of power the motor must draw.
- **Air Pressure:** Make sure your tires have the proper air pressure. Proper pressure reduces drag on the tires and radically increases the efficiency of any vehicle.
- **Head and Tail Lights:** Turn off the lights to conserve power, if it is safe to do so. The lights will reduce the distance you can travel by about 5%.
- **Pedalling:** When accelerating from a full stop, you might want to try pedaling to help acceleration

Charging your E-Bike

Charging your e-bike is a simple process. You require the following:

- The charger that came with your e-bike.
- A 110V household electrical outlet.

Charger Warning

Only use the chargers that were supplied with your e-bike. Using chargers that do not have specifications identical to those which came with the e-bike could irreparably damage your e-bike's battery and electrical systems, and may cause injury.

To charge your e-bike, follow these steps:

1. Turn off the e-bike and remove the key from the "ignition."
2. Plug the female end of the charger cable into the charging slot on the e-bike. This is found on the outside casing of the e-bike, in front of and just underneath the seat.
3. Plug the male end of the charger power cable into your wall socket. This should be a110v household electricity supply. You can also use a portable generator, if necessary, but make sure it provides 110V current.
4. Allow the e-bike's battery to charge for the appropriate amount of time (6-12 hours).
5. Disconnect the charger when the LED light on the charger is green. The batteries have been fully charged.

If your charger's LED status light does not change from red to green over an extended period of time, for perhaps more than 14 hours, and the battery is very hot, the battery or charger may need replacing. Stop charging and bring both to your Daymak dealer immediately. Do not charge the battery.

Battery Care

Follow these suggestions to maintain your battery's optimal performance. If you do not follow these suggestions, your battery may lose its ability to maintain a charge and might have to be replaced sooner than would otherwise be necessary.

- Charge it: Charge your battery immediately after riding it.
- Full Charge: Do not allow the battery to run down completely and lie in storage without a charge. This significantly reduces the battery's lifespan and may cause damage.
- Keep it Charged: When being stored, charge the battery occasionally to make sure its power supply does not run down. Charging it once every 21 days should be sufficient.
- Storage Conditions: Store the battery on a flat, cool, dry surface. Do not allow the battery temperature to drop below 10 degrees Celsius for extended periods of time.

Warning

DO NOT place your Lead-Acid battery on concrete. Concrete drains the battery's power and will neutralize the lead-acid. Placing the battery on concrete for any length of time will likely result in the battery being drained of power and possibly losing its ability to store electricity.

Cold Weather and your Battery

Below 10 degrees Celsius, the battery will not work as well as it would in warmer temperatures. While Lithium-Ion batteries perform better than Lead-Acid batteries in temperature extremes, both will experience reduced performance in cold temperatures.

Also, repeatedly riding the e-bike in cold temperatures may cause your battery to have to be replaced sooner.

Handling the Battery

The battery contains large amounts of electrical power. You must use caution and respect when handling it. Not following these instructions can result in serious injury.

Warning

Follow these instructions closely. Use care when handling your battery.

- Always lift the battery with both hands, and carry it with care. Never drop the battery. If the case is damaged, the contents may leak out.

- Never puncture or open the battery case. The contents are dangerous and may cause injury. Do not touch the contents of a leaking battery. Seek help immediately.

- Do not touch the two metal poles on the battery box at the same time. This can cause a short-circuit. It could injure you or others and cause serious damage to the electrical systems in the e-bike. Your battery contains significant amounts of electrical power.

- Do not handle your battery if either you or the battery are wet. Water is an excellent conductor of electricity. You may experience an electrical shock, and you may be injured.

Replacement and Disposal

After approximately 300 charges, a lead-acid battery will need to be replaced. A lithium-ion battery will last approximately 1500 charges. When the battery has to be replaced, you will notice that your battery cannot carry as much of a charge as it could initially.

Contact your local Daymak dealer to purchase a new battery.

When replacing your battery, dispose of it at a proper municipal battery recycling facility. If none is available, please contact your local Daymak dealer.

Warning

Be absolutely sure that you replace the battery with an identical or very similar battery. While it is possible to change the battery format or power levels, this requires advanced knowledge of electrical systems. If improperly done, this can result in immediate and irreparable damage to the electronic controller and electrical systems. Be absolutely certain of what you are doing before you replace the battery with a different type of battery.

Using the wrong type of battery will also void your warranty.

Technical Data

This section provides you with the technical specifications for your e-bike.

The Motor and Wheel Assembly

The Smart Bike has a 500 Watt magnetic DC brushless motor on the rear wheel hub. This type of motor has excellent low-end torque and high efficiency when working within its range. Note that while the motor is very quiet, it does produce some noise. Also attached to the rear hub are speed reduction gear and the speed free clutch.

The Freewheel

The wheels have freewheels, so the e-bike's drive train is not fixedly geared. This means that when coasting or traveling downhill, you can turn off the engine and your e-bike will continue to move without slowing. This feature will allow you to achieve faster speeds when coasting, moving downhill or moving with the wind. It will also allow you to conserve electrical power, because you will be able to let to the motor rest while moving.

The Controller

Daymak pioneered the development of intelligent component control in e-bikes. The "D- Drive" technology developed by Daymak is the brain of your e-bike. It allows your e-bike to achieve faster acceleration, to climb steeper hills, and to save energy. In future, it will allow for other ways of recharging your e-bike's batteries, such as by using solar or wind power.

The electronic controller is located under the seat assembly. This controller efficiently regulates the speed and electronic functions of the bicycle. It allows for stepless speed adjustment, shuts off the motor when the brakes are activated, has low voltage protection and has fuses to prevent excess current from damaging the e-bike's systems.

The Governor

A key component of the controller is the Governor. The Governor regulates the speed of the e-bike. It prevents the motor from assisting riders when the e-bike's speed surpasses
32 km per hour.

The governor's primary function is to make sure that the motor functions efficiently. If the governor is not functioning, the mileage of the e-bike will be dramatically reduced, and its performance will suffer.

Disabling the governor voids the warranty, and may damage your controller.

This speed limitation to 32 km per hour is required by government regulations. Traveling faster than 32 km per hour through motor power alone is illegal in Canada and could result in serious fines or penalties, unless your vehicle is insured for liability, is registered and you are licensed to drive.

The Brakes

Front Brakes

The brakes on your e-bike are drum-brakes, like those found on gas scooters and motorcycles. They generally provide for very fine stopping and control. This is a very tested and well-designed technology, but even so, the brakes will require servicing from time to time, and may have to be adjusted for tension.

Unlike normal friction-grip bicycle brakes, which clamp down from the outside, the drum brakes clamp from the inside. When the brakes are activated, tension increases and the clamps engage. This is a very effective and reliable way to stop a vehicle.

The brakes are contained within a sealed unit, and are very finely adjusted and fitted.

Rear Brakes

The rear brakes on your e-bike are EABS Brakes (Electric Absorption Braking System). These provide a good friction-grip when they are activated. They significantly less than standard drum brakes. Using these brakes helps to reduce the weight of the e-bike and improve its performance.

The Chain and Pedals*

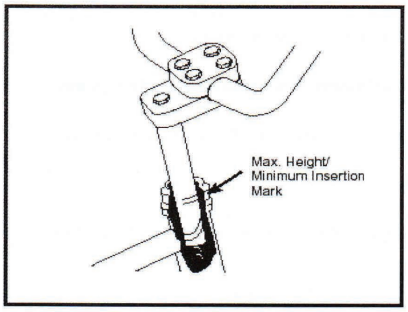
The pedals are connected to the rear wheel. Along with the chain, they provide a human- powered "drive train". This is an important part of your e-bike. The pedals are not removable and should not be removed.

Shock Absorbers

Your Monaco e-bike is equipped with Reverse Shock System shock absorbers. These effective but simple devices absorb the energy from bumps and dips, and allow you to have a much more comfortable ride. The Reverse Shock System is superior to normal Monoshock shock absorbers usually found on e-bikes, and provides for a much more comfortable ride.

While they are very resilient, please note that very sharp or large shocks, such as drops from a height of 15 cm or more, can cause serious damage to your shock absorbers. Replacing them is a complex and time-consuming task, so do be careful when dropping from larger heights.

Your scooter may or may not have pedals.

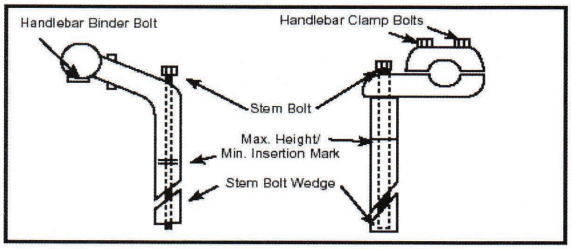


HANDLEBARS AND STEM

Handlebar Stem

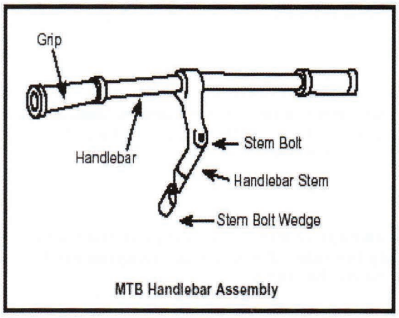
The handlebar stem fits into the steering column and is held firmly by the action of a binder bolt and expander wedge which, when tightened, binds with the inside of the fork steerer tube. When removing the stem, loosen the stem bolt two or three turns, then give it a tap to loosen the wedge inside.

Lubricate by first wiping off any old grease and grime, then applying a thin film of grease to the part, including the wedge, that will be inserted into the frame. The height of the handlebar can be adjusted to suit your comfort preference. If the stem is removed from the steering column, you will notice a mark about 65mm up from the bottom with the words "max. height" or "minimum insertion".



Never ride a bicycle if the stem has been raised so that the max. height/ minimum insertion line can be seen.

Warning: Over tightening the stem bolt or headset assembly may cause damage to the bicycle and/or injury to the rider.



MTB Handlebar Assembly

When re-fitting the stem, make sure the handlebars are correctly aligned and tightened using the appropriate hex wrench or allen key.

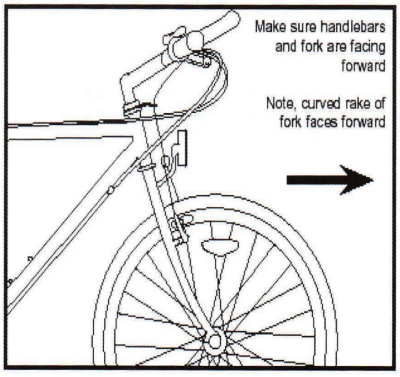
Do not over tighten.

Test the security of the handlebar within the stem, and the stem within the fork steerer tube, by clamping the front wheel between your knees and trying to move the handlebar up and down, and from side to side. The handlebar should not move when applying turning pressure.

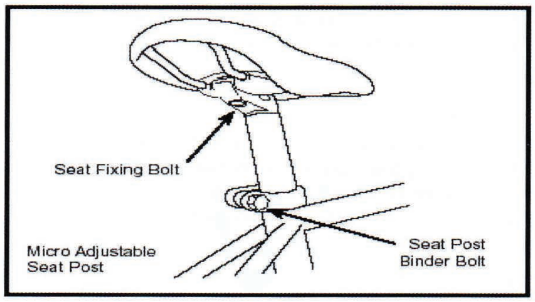
Handlebars

The exact positioning of the handlebar is a matter of personal comfort. For MTB bicycles, the bar should be approximately horizontal, with the ends pointing back and slightly up. On BMX bicycles, the handlebar should remain in an approximately upright position but can be angled back or forward slightly for comfort. On MTB and racing style bicycles, the handlebar is usually tightened in the stem by a single allen key bolt or hexagonal bolt. On BMX style bicycles there may be four clamping bolts.

Please note that if you need to replace the fork on your bicycle at any time, please consult a qualified bicycle technician.



Never ride unless the handlebar clamping mechanism has been securely tightened.

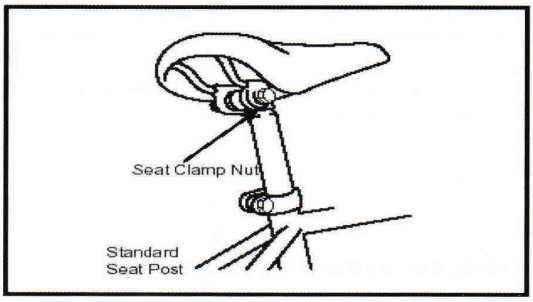


SADDLE AND SEAT POST

Inspection

The seat fixing bolt and the seat post binder bolt should be checked for tightness and adjustment every month. On removing the seat post from the frame, you will notice a mark about 65mm up from the bottom with the words "max. height" or "minimum insertion".

To avoid damage to either the seat post, the frame or possibly the rider, the minimum insertion mark must be inside the frame.

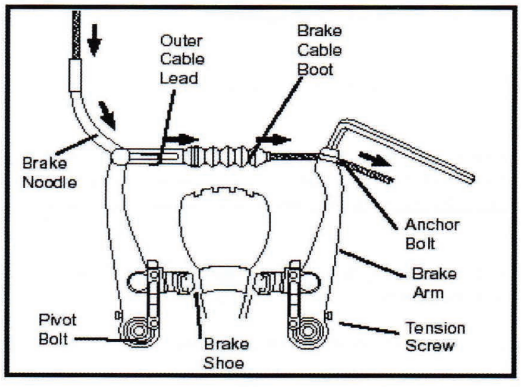


Lubrication

Remove the seat post from the frame and wipe off any grease, rust or dirt. Then apply a thin film of new grease to the part that will be inserted into the frame. Re-insert, adjust and tighten the seat post in the frame.

Front Brake

Determine which type of brake your bike is equipped with and refer to the appropriate assembly instructions. For more information on brake adjustment and maintenance, refer to pages 74-77.

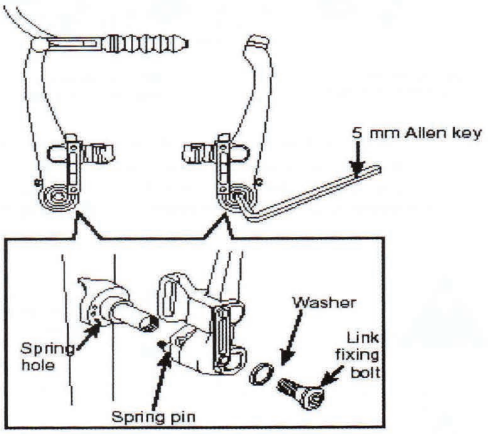


V-Style Brakes

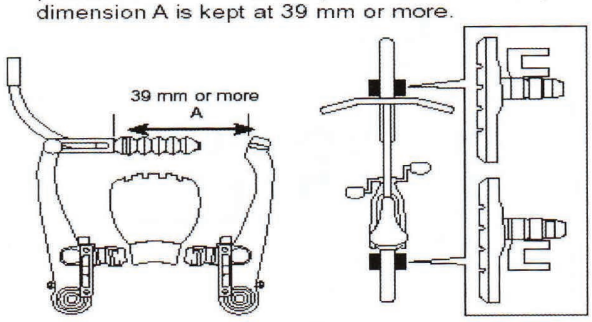
If not already assembled, take the brake noodle from the parts box and slide the cable through the larger opening. The cable housing will then seat into the end of the noodle. Slide the cable through the cable lead on the end of the left brake arm, this will cause the noodle to fit into the lead. Slip the brake cable boot over the cable and position it between both brake arms. Next, loosen the 5mm anchor bolt at the end of the right brake arm and slide the cable under the retaining washer. Pull the slack out of the cable making sure a distance of 39mm or more remains between the end of the lead and the start of the anchor bolt. Once the cable is secured to the brake arms, engage the brake lever several times, checking the position of the brake shoes at the rim. The brake shoes should be 1mm away from the rim when in a relaxed position. When the brake lever is engaged, the brake shoe should hit the rim flush (never the tire) with the front of the brake pad touching the rim slightly before the rear. This is called "toeing-in" your brake shoe. If this position is not achieved, adjustments to the brake shoe are required. Loosen the brake shoe hardware and reposition the brake shoe. It may take several shoe and cable adjustments before the required position is accomplished.

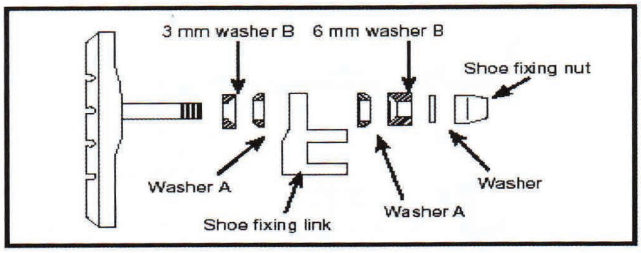
V - Brake

1. If fitted with V-Brakes, insert the brake body into the center spring hole in the frame mounting boss, and then secure the brake body to the frame with the link fixing bolt.



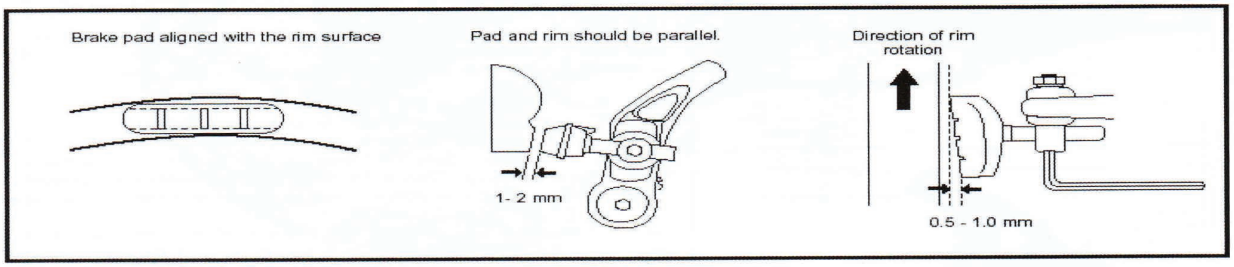
2. While holding the shoe against the rim, adjust the amount of shoe protrusion by interchanging the position of the B washers (i.e. 6 mm and 3 mm) so that dimension A is kept at 39 mm or more.





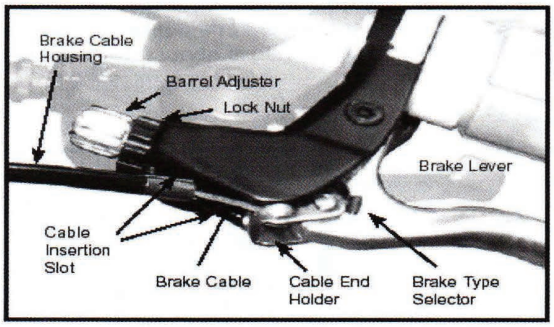
Check your Brakes

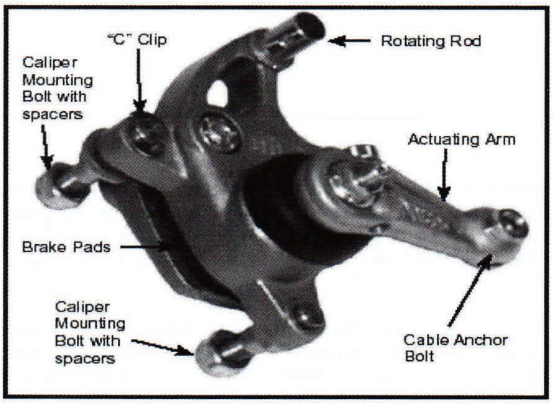
Press each brake lever to make sure that there is no binding and that the brake pads press hard enough on the rims to stop the bike. The brake pads should be adjusted so they are 1 mm to 2 mm away from the rim when the brakes are not applied. Brake pads should be centered on the rim and "toed-in" so the rear portion of each brake pad is about 0.5 - 1.0 mm farther from the rim than the front portion of the brake pad.



Do not ride the bicycle until the brakes are functioning properly. To test, apply the brakes while trying to push the bike forward to make sure they will stop the bicycle. Never ride a bicycle that is not functioning properly.

Do not lock up brakes. Sudden or excessive application of the front brake may pitch the rider over the handlebars, causing serious injury or death. When braking, always apply the rear brake first, then the front.





Disc Brakes (if equipped)

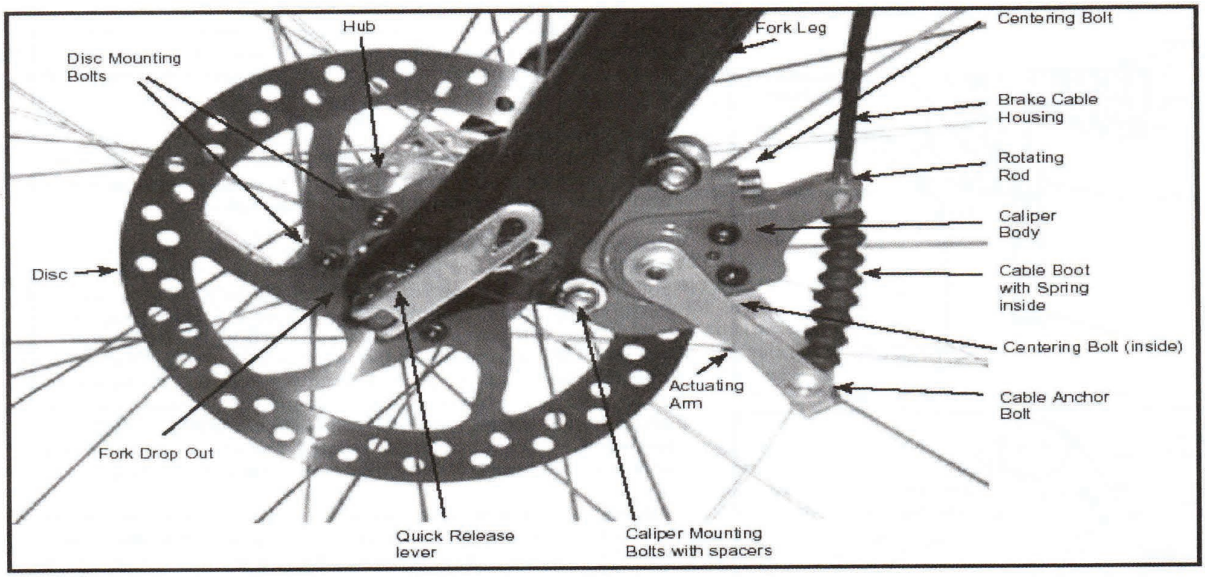
If fitted with a front disc brake, the components should already be attached. However, please check all connections before attempting to ride the bicycle. Secure tightly the 6 bolts that hold the disc to the front wheel hub and the 2 bolts that hold the brake mechanism to the fork. Insert the front wheel into the fork dropouts ensuring that the disc fits into the brake mechanism between the enclosed brake pads. Secure the front wheel to the bicycle by tightening the quick release mechanism and clamping the lever to the closed position. Please refer to section 6 for further instruction on quick release mechanisms.

Next, attach the cable to the brake lever by inserting the cable end into the cable end holder after the barrel adjuster and lock nut slots have been aligned with the cable end holder. After the cable is secured to the lever, rotate the barrel adjuster and lock nut so the slots no longer line up. Ensure the cable housing seats appropriately into the end of the barrel adjuster and check for any kinks or damage.

Slide the exposed brake cable through the rotating rod/housing stop located on the caliper body and seat the housing all the way into the same stop. Insert the cable into the spring and spring boot.

Next, slide the cable through the cable anchor and pull all the slack out. Secure the cable in place by tightening the bolts that comprise the anchor assembly. Some disc brakes will have a centering devise while others are a free-floating mechanism. If your caliper body is equipped with centering bolts, apply the brake lever after the cable has been connected. While engaging the lever, tighten the centering bolts securely. This will center the caliper body on the disc.

DISC GETS HOT! Severe injury could result from contact with the hot disc! Mind your legs, as well as your hands.



These brakes require breaking in! Ride and use the brakes gently for 13 miles before using the brakes in downhill conditions, for sudden stops, or any other serious braking. Please be aware that your brake system will change in performance throughout the wear-in process. The disc brake should be cleaned before the first ride using rubbing alcohol. NEVER use oil or similar products to clean your disc brake system.

Avoid touching the rotor (disc) with your fingers at any time. Naturally oily fingers can contaminate the rotor and/or the brake pads and diminish the brake's effectiveness.

Ebike Maintenance

Cleaning

Cleaning is extremely important this will ensure your e-bike will serve you for a long time. In the long run, it will save you money and a lot of time waiting for the bike to be repaired. You should clean your ebike weekly.

Do not use aggressive power jets or water sprays when washing the ebike and keep water off the battery as much as you can. Clean gently but thoroughly and make sure that all the outer casing of the electric parts are dry and clean.

Remove any dirt, debris, sand, mud, grit, grime that got caught on the bike and dry it off. While cleaning, it is a good opportunity to look closely for a worn, loose, cracked, rust, teared or damaged parts. Buckled paint can also be a hint for some parts that need closer inspection.

Lubricating

It is also recommended to lubricate the chain, levers, derailleur, cables, etc. A clean, lubricated e-bike tends to be faster, smoother and quieter. It's like having a little extra push for free.

Apply the lubricant to the different parts and let it sit a few minutes and then wipe off the excess lubricant with a rag. After a while, clean the different parts with a degreaser to remove any excess dirt that has been collected.

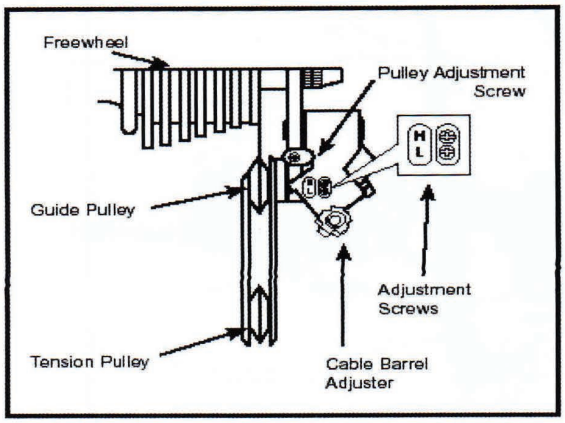
Weather

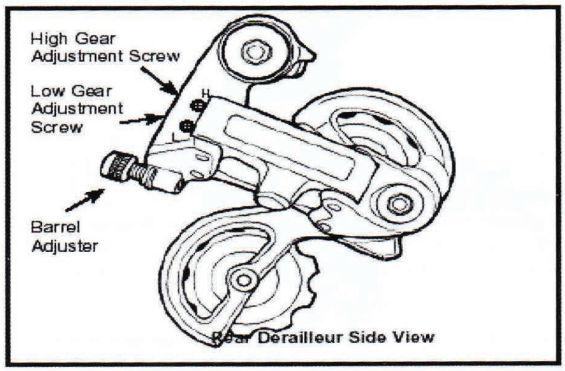
Don't leave the bike out in the rain or snow.

Store it somewhere dry and out of direct sunlight. Overheating the batteries, for example, can cause problems.

Do not open up casings, chargers, etc as you are unlikely to be able to reseal them effectively afterward, making them more susceptible to water damage and other extreme weather conditions.

Batteries should be removed from the ebike if not used and charged once a month regardless of usage.





Rear Derailleur Side View

Derailleur

Although the front and rear derailleurs are initially adjusted at the factory, you will need to inspect and readjust both before riding the bicycle.

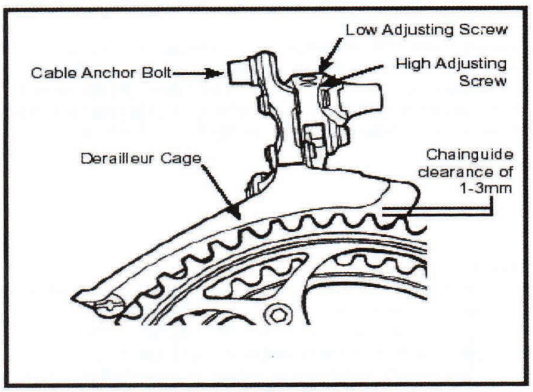
Rear Derailleur

Begin by shifting the rear shifter to largest number indicated, disconnect the cable from the rear derailleur cable anchor bolt, and place the chain on the smallest sprocket.

Adjust the High limit screw so the guide pulley and the smallest sprocket are lined up vertically. Reconnect the cable, pull out any slack, and retighten the anchor bolt securely. Shift through the gears, making sure each gear achieved is done quietly and without hesitation. If necessary, use the barrel adjuster to fine tune the cable tension by turning it the direction you want the chain to go. For example, turning clockwise will loosen the cable tension and move the chain away from the wheel, while turning counter-clockwise will tighten cable tension and direct the chain towards the wheel. Shift the rear shifter to the gear one and place the chain on the largest cog.

Adjust the Low limit screw in quarter turn increments until the guide pulley and the largest cog are aligned vertically. Again, shift through each gear several times, checking that each gear is achieved smoothly. It may take several attempts before the rear derailleur and cable is adjusted properly.

Ensure all bolts are secured tightly and the chain does not fall off in either direction.



Front Derailleur

Shift both shifters to the smallest number indicated and place the chain on the corresponding cog and chainwheel. Disconnect the front derailleur cable from the cable anchor bolt. Check the position of the front derailleur; it should be parallel with the outer chainwheel and clear the largest chainwheel by 1-3mm when fully engaged.

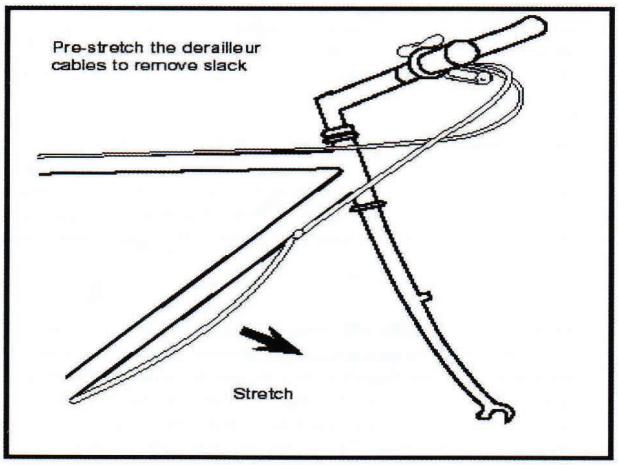
With the chain on the smallest chainwheel in front and the largest cog in back, adjust the Low limit screw so the chain is centered in the front derailleur cage. Reconnect the cable, pull any slack out, and tighten the anchor bolt securely. Shift the front shifter to the largest chainwheel. If the chain does not go onto the largest chainwheel, turn the high limit screw in 1/4 turn increments counter-clockwise until the chain engages the largest chainwheel. If the chain falls off the largest chainwheel, and into the pedals, you will need to turn the High limit screw in 1/4 turn increments clockwise until the chain no longer falls off.

Shift through every gear, using the barrel adjusters to fine tune the cable tension. The barrel adjuster for the front derailleur is located on the front shifter where the cable comes out of the shifter. Clockwise will loosen the cable tension and direct the chain closer to the frame while counter-clockwise will tighten the cable tension and direct the chain away from the frame.

Do not ride a bicycle that is not shifting properly. Overlooking proper adjustments may cause irreparable damage to the bicycle and/or bodily injury. Never move the shifter while pedaling backward, nor pedal backwards after having moved the shifter. This could jam the chain and cause serious damage to the bicycle and/or rider.

DERAILLEUR SYSTEMS

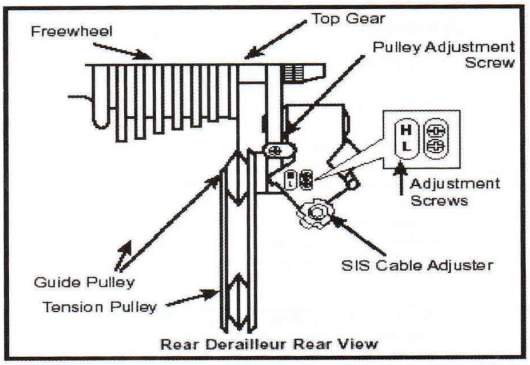
The derailleur system includes the font and rear derailleurs, the shift levers, and the derailleur control cables, all of which must function correctly for smooth gear shifting to occur. There are several different types of derailleur systems, but all operate using similar principles. Your new bicycle may be fitted with an "indexing" or "click" shifting system (SIS), which links each gear position to a positive click mechanism in the shifter, and makes shifting very simple and precise. A further development of SIS is the fully integrated system (STI) where the shift lever and brake lever mechanisms form an integrated unit on the handlebars.



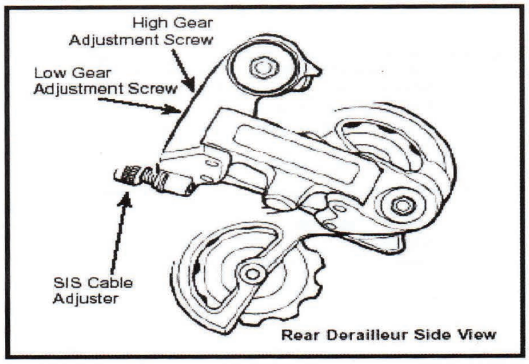
Inspection

The operation of the derailleur system should be checked at least every month. Check the operation of the rear derailleur first, then the front. The rear derailleur should shift the chain cleanly from one cog to the next without hesitation. On SIS equipped bicycles, each notched position in the shifter must equate to a new gear position. After shifting, the rear derailleur should not rub on the chain. The derailleur should never cause the chain to fall off the inner or outer freewheel cogs.

The front derailleur should also shift the chain cleanly and without hesitation between each chainring. If your bicycle is equipped with front SIS, then each click or stop in the shifter should equate exactly to a new gear position. When the chain has been positioned onto a new chainring, it should not rub on the front derailleur. The chain should not fall off a chainring at any time. Derailleur control cables are a critical component that must be well maintained for accurate shifting performance. Check them for any sign of rust, fraying, kinks, broken strands and any damage to the cable housing. If you find any problems, the cables may need replacing before you ride.



Rear Derailleur Rear View



Rear Derailleur Side View

Lubrication

All the pivoting points of the front and rear derailleurs should be lubricated with light oil at least every month. Be sure to wipe off any excess oil to prevent attraction of dirt into the mechanisms. The shifting cables should be cleaned and re-coated with a thin layer of grease every six months, or whenever new cables are being installed.

Adjustment - Rear Derailleur

The Low limit screw determines how far the rear derailleur will travel toward the wheel of the bicycle, while the High limit screw determines how far the cage will travel toward the frame.

1. Shift the rear shifter to the largest number indicated, disconnect the rear derailleur cable from the cable anchor bolt and place the chain on the smallest sprocket.
2. Adjust the High limit screw so the chain and the smallest sprocket are lined up vertically. Remove any slack in the cable by pulling it taut, then re-connect the cable and tighten the cable anchor bolt securely.
3. Shift up through the gears making sure that each gear is achieved quietly and without hesitation. If noise occurs, use the barrel adjuster to fine-tune the cable tension. Turning the barrel adjuster **clockwise** will decrease cable tension and allow the derailleur cage to move farther away from the bicycle in small increments. Turning **counter-clockwise** will increase cable tension and bring the cage closer to the bicycle. This will micro-adjust the positioning of the derailleur cage in relation to the freewheel. Simply put; turn the barrel adjuster the direction you want the chain to go.
4. Shift the chain onto the largest sprocket; adjust the low limit screw so the chain and the largest cog are lined up vertically. If you are unable to get the chain to the largest cog, turning the Low limit screw counter-dockwise will enable the chain to move towards the wheel.
5. Shift through the gears ensuring each gear is achieved quietly and without hesitation.
   NOTE: It may take several adjustments to achieve the desired positioning. Please refer to the troubleshooting section for more assistance.

Problem	Possible Cause	Remedy
Gear shifts not working properly	- Derailleur cables sticking/stretched/damaged - Front or rear derailleur not adjusted properly - Indexed shifting not adjusted properly	- Lubricate/tighten/replace cables - Adjust derailleurs - Adjust indexing
Slipping chain	- Excessively worn/chipped chainring or freewheel sprocket teeth - Chain worn/stretched - Stiff link in chain - Non compatible chain/chainring/ freewheel	- Replace chainring, sprockets and chain - Replace chain - Lubricate or replace link - Seek advice at a bicycle shop
Chain jumping off freewheel sprocket or chainring	- Chainring out of true - Chainring loose - Chainring teeth bent or broken - Rear or front derailleur side-to-side travel out of adjustment	- Re-true if possible, or replace - Tighten mounting bolts - Repair or replace chainring/set - Adjust derailleur travel
Constant clicking noises when pedaling	- Stiff chain link - Loose pedal axle/bearings - Loose bottom bracket axle/bearings - Bent bottom bracket or pedal axle - Loose crankset	- Lubricate chain / Adjust chain link - Adjust bearings/axle nut - Adjust bottom bracket - Replace bottom bracket axle or pedals - Tighten crank bolts
Grinding noise when pedaling	- Pedal bearings too tight - Bottom bracket bearings too tight - Chain fouling derailleurs - Derailleur jockey wheels dirty/binding	- Adjust bearings - Adjust bearings - Adjust chain line - Clean and lubricate jockey wheels

Problem	Possible Cause	Remedy
Freewheel does not rotate	- Freewheel internal pawl pins are jammed	- Lubricate. If problem persists, replace freewheel
Brakes not working effectively	- Brake blocks worn down - Brake blocks/rim greasy, wet or dirty - Brake cables are binding/stretched/damaged - Brake levers are binding - Brakes out of adjustment	- Replace brake blocks - Clean blocks and rim - Clean/adjust/replace cables - Adjust brake levers - Center brakes
When applying the brakes they squeal/squeak	- Brake blocks worn down - Brake block toe-in incorrect - Brake blocks/rim dirty or wet - Brake arms loose	- Replace blocks - Correct block toe-in - Clean blocks and rim - Tighten mounting bolts
Knocking or shuddering when applying brakes	- Bulge in the rim or rim out of true - Brake mounting bolts loose - Brakes out of adjustment - Fork loose in head tube	- True wheel or take to a bike shop for repair - Tighten bolts - Center brakes and/or adjust brake block toe-in - Tighten headset
Wobbling wheel	- Axle broken - Wheel out of true - Hub comes loose - Headset binding - Hub bearings collapsed - QR mechanism loose	- Replace axle - True wheel - Adjust hub bearings - Adjust headset - Replace bearings - Adjust QR mechanism

TPS Training Bulletin

TPS Training Bulletin
Attention Traffic and Training Sergeants:

Recently we have had some enquiries from officers in the field and members of the public regarding e-bikes and have found that there is some confusion over the definition of a Power Assisted Bicycle (e-bike).

According to Ontario Regulation 473/06, an e-bike that meets the definition is deemed not to be a motor vehicle, under the Highway Traffic Act, and is essentially treated as a bicycle. Any person 16 years and over who wears a bicycle helmet as required by subsection 104 (2.1) of the HTA may ride a power assisted bicycle on the highway. There is no requirement for a drivers license, a permit or insurance.

The main requirements for a bicycle to be designated a "power assisted bicycle" is that it "is capable of being propelled by muscular power" and a "bears a label that is permanently affixed by the manufacturer stating that the vehicle is a power assisted bicycle". Obviously while the e-bike is being operated on the road, the pedals must be attached and functional.
O. Reg 473 refers to federal Motor Vehicle Safety Regulations for a definition. Rick Line, TC 4365,
TPS Training & Education Unit, Traffic & Provincial Statutes Section, C.O. Bick College, 4620 Finch Ave. E., Scarborough, On, M1S-4G2
Ph: 416-808-4877
"Committed to Lifelong Learning"